

# **EXHIBIT 3**



## PERMIT APPLICATION REVIEW SUMMARY

**New Hampshire Department of Environmental Services**  
**Air Resources Division**  
**P.O. Box 95, 29 Hazen Drive**  
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<b>Facility:</b>	PSNH Schiller Station			<b>Engineer:</b>	TAM
<b>Location:</b>	400 Gosling Road, Portsmouth, NH				
<b>AFS #:</b>	3301500012	<b>Application #:</b>	12-0101	<b>Date:</b> 10/30/12	Page 1 of 5

### FACILITY DESCRIPTION

Public Service of New Hampshire – Schiller Station is a wood & fossil fuel-fired electricity generating facility owned and operated by Public Service of New Hampshire (PSNH), a subsidiary of Northeast Utilities. The facility includes three utility boilers: one wood & fossil fuel-fired boiler (designated as emission unit SR5) and two fossil fuel-fired boilers (designated as emission units SR4 and SR6). The facility also includes one combustion turbine (designated as emission unit SRCT). In addition to these electricity-generating units, the facility also includes an emergency generator, a primary and secondary coal crusher, coal and wood handling systems and various insignificant and exempt activities.

### PERMIT HISTORY

Emission units and current permits and orders are listed below. Emission units in bold type are the subject of this application.

EU	Device	Permit Number	Permit Issued	Permit Expires	Status/Note
<b>SR4</b>	<b>Steam Generating Unit No.4</b>	TV-OP-053	03/09/07	03/31/12	Application shield
		ARD-98-001	07/17/98	n/a	Active - NOx RACT Order (incl. other facilities)
		TP-0039	01/15/10 01/26/11	07/31/11	Biomass co-firing Application shield
SR5 (old)	Steam Generating Unit No.5 (old)	TV-OP-053	03/09/07	03/31/12	Old SR5 Rendered inoperable 2006
		ARD-98-001	07/17/98	n/a	
<b>SR6</b>	<b>Steam Generating Unit No. 6</b>	TV-OP-053	03/09/07	03/31/12	Application shield
		ARD-98-001	07/17/98	n/a	NOx RACT Order (incl. other facilities)
		TP-0039	01/15/10 01/26/11	07/31/11	Biomass co-firing Application shield
<b>SRCT</b>	<b>Combustion Turbine</b>	TV-OP-053	03/09/07	03/31/12	Application shield
SRCC	Coal Crusher	TV-OP-053	03/09/07	03/31/12	Application shield
SREG	Emergency Generator	TV-OP-053	03/09/07	03/31/12	Application shield
SR5 (new)	Steam Generating Unit No. 5 (new)	TP-B-0501	10/25/04 03/07/06	04/30/07	Application shield
		ARD-06-001	08/04/06	n/a	NOx RACT Order
		TP-0085	09/27/11	03/31/13	Current
SRCC2	Secondary Coal Crusher	TP-B-0501	10/25/04 03/07/06	04/30/07	Application shield
		TP-0085	09/27/11	03/31/13	Current

### PROJECT DESCRIPTION

The purpose of this permit is to establish permit conditions to document previously agreed upon emission limitations on emission units SR4, SR6, and SRCT. These operating and emission limitations were previously accepted by PSNH during review of past projects on other emission units. There is no current project which is triggering need for this permit application. A description of the previous circumstances under which the need

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<b>AFS #:</b>	3301500012	<b>Application #:</b>	12-0101	<b>Date:</b>	10//30/12
					Page 2 of 5

for the emission limits that are the subject of this application were identified is presented below.

#### SR4 & SR6: Sulfur Dioxide Emissions

During the review of Title V permit application for Schiller Station in 2002, DES identified a discrepancy between the modeled and actual property boundary for the facility. Modeling performed to investigate this issue predicted exceedances of the SO<sub>2</sub> NAAQS based upon SR4 and SR6's permitted SO<sub>2</sub> emission rate of 2.9 pounds of SO<sub>2</sub> emitted per million British thermal units of heat input (2.9 lb/MMBtu). The modeling did not predict an SO<sub>2</sub> NAAQS exceedance if the SO<sub>2</sub> emission rate from SR4 and SR6 was lowered to 2.4 lb/MMBtu. This situation is described in more detail in a letter from PSNH received at DES on December 11, 2003 (Attachment A).

PSNH agreed to accept the limitation of 2.4 lb/MMBtu for SR4 and SR6 in 2003. Please note that SR4 and SR6 typically emit SO<sub>2</sub> at a rate of approximately 1 lb/MMBtu. Since New Hampshire does not have the authority to establish new applicable requirements via a Title V Operating Permit, a Temporary Permit is required to change the permit limit from 2.9 lb/MMBtu to 2.4 lb/MMBtu. No Temporary Permits have been issued for units SR4 or SR6 since the need for the new emission limit was identified. DES requested of PSNH that they submit an application for a temporary permit to document this emission limit, which PSNH submitted to DES on June 18, 2012. DES is now processing this application for a temporary permit to establish enforceable permit conditions for this previously-agreed SO<sub>2</sub> emission limit of 2.4 lb/MMBtu for SR4 and SR6.

#### SRCT: Annual NOx Emissions

In 2004, PSNH applied for a permit to construct a new boiler (new emission unit SR5, a.k.a., Northern Wood Power Project) at Schiller Station. This new construction project triggered the need for an updated air dispersion modeling analysis for the facility. Initial modeling predicted an exceedance of the annual NO<sub>2</sub> NAAQS at existing permitted emission rates and proposed new construction. Further analysis showed that the predicted NO<sub>2</sub> exceedances could be eliminated if annual NOx emissions from the SRCT were limited to 85% of their potential. PSNH selected this compliance option and agreed to accept an annual capacity factor limit of 85% for the SRCT. This previous modeling analysis is described in more detail in a NHDES modeling memos associated with review of the new SR5 and dated July 5, 2004 and August 26, 2004 (Attachments B and C).

The combustion turbine is permitted to burn two fuels: JP-4 or natural gas. NOx emissions from SRCT are limited to 0.90 lb/MMBtu on a 24-hour calendar day basis. Although the limit applies at all times, it is primarily pertinent when the turbine is burning fuel oil since NOx emissions are inherently lower when burning natural gas (approximately 0.32 lb/MMBtu). There are no restrictions on the annual operation of SRCT: it is permitted to operate 8760 hours per year on either, or any combination of, fuel oil or natural gas. Modeling performed for the new SR5 described above initially assumed annual NOx emissions from SRCT to be 1,143 tons per year, which is its permitted potential on the highest NOx emitting fuel (i.e., 8760 hours at full load on fuel oil). The modeled NO<sub>2</sub> exceedances were eliminated when annual NOx emissions were limited to 941 tons per year (85% of potential). PSNH agreed to accept that limit.

Please note that actual annual NOx emissions from the SCRT for the years 2001 through 2011 have ranged from 1.36 to 12.33 tons per year, which is much less than the maximum emissions (971 tons) at which modeling indicated compliance with the annual NO<sub>2</sub> NAAQS.

Since the SRCT was not part of the permitting for the new SR5, this permit limitation was not established in the Temporary Permit for the new SR5 (TP-B-0501). No Temporary Permits have been issued for SRCT since the need for the new emission limit was identified. DES requested of PSNH that they submit an application for a

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<b>AFS #:</b>	3301500012	<b>Application #:</b>	12-0101	<b>Date:</b>	10/30/12
					Page 3 of 5

temporary permit to document this emission limit, which PSNH submitted to DES on June 18, 2012. DES is now processing this application for a temporary permit to establish enforceable permit conditions for this previously-agreed operating limit reflecting 85% of the annual NOx potential from SRCT. The limit will be expressed as a 12-month rolling limit on the amount of fuel oil combusted in the SRCT. The calculation of the fuel oil consumption limit is shown in section CHANGES FROM PREVIOUS PERMIT, below.

#### SRCT Fuel Oil Sulfur Content

Modeled exceedances of SO<sub>2</sub> were identified during review of other nearby projects in the late 1990's. One part of the solution included lowering the fuel oil sulfur content of fuel oil burned in the SCRT from the default State standard of 0.40% sulfur to 0.05% sulfur. PSNH agreed to accept that limit. This situation is described in more detail in a DES modeling memo dated July 9, 1999 (Attachment D).

Since the SRCT was not part of the permitting associated with the projects which identified the need for the fuel oil sulfur content restriction, a permit limitation was not established at the time the solution was identified. No Temporary Permits have been issued for SRCT since the need for the new fuel oil sulfur content limit was identified. Please note that fuel oil sulfur content testing during the most recent emission test performed on the SCRT (NOx RACT testing performed in May 2010) indicated an actual fuel oil sulfur content of 0.0285% in the JP-4 fuel burned in the SRCT. DES requested of PSNH that they submit an application for a temporary permit to document this fuel oil sulfur content limit, which PSNH submitted to DES on June 18, 2012. DES is now processing this application for a temporary permit to establish enforceable permit conditions for this previously-agreed fuel oil sulfur content limit of 0.05% sulfur for fuel oil burned in the SRCT.

### **CHANGES FROM PREVIOUS PERMIT**

#### **SR4 & SR6: Sulfur Dioxide Emissions**

As noted above, the current permit(s) covering emission units SR4 and SR6 contain an SO<sub>2</sub> emission limit of 2.9 lb/MMBtu (heat input basis) 24-hour calendar day average. The temporary permit with this application will establish a new, more stringent emission limit of 2.4 lb/MMBtu, heat input basis, 24-hour calendar day average.

Other existing SR4 and SR6 sulfur limits (e.g., coal sulfur content and annual SO<sub>2</sub> emission limits) are not affected by this action.

Existing monitoring, recordkeeping, and reporting permit requirements are sufficient to monitor, document, and report data associated with determining compliance with the new emission limit. No new or modified monitoring, recordkeeping, or reporting requirements are proposed.

#### **SRCT: Annual NOx Emissions**

As noted above, the current permit(s) covering emission unit SRCT do not restrict the operation of, or NOx emissions from, the SRCT on an annual basis. The temporary permit with this application will establish a new annual fuel use limitation at a level which, when combined with the 24-hour NOx emission rate limit (when using fuel oil) and default NOx emission rate when burning natural gas, will ensure that NOx emissions from SRCT will be limited to 85% of its annual potential.

The temporary permit will establish a new limit restricting fuel oil consumption in SRCT to 13,900,000 gallons in any consecutive 12-month period. Calculations upon which this limit is based are presented below.

#### Potential annual emissions of NOx from SCRT:

PERMIT APPLICATION REVIEW SUMMARY					
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					Page 4 of 5

$(0.90 \text{ lb/MMBtu} \times 290 \text{ MMBtu/hr} \times 8760 \text{ hr/yr}) / 2000 \text{ lb/ton} = 1,143 \text{ ton/yr}$

Where:

0.90 lb/MMBtu = NO<sub>x</sub> emission limit for SRCT (24-hr calendar day average). Note that this emission factor represents fuel oil combustion. NO<sub>x</sub> emissions from natural gas combustion are calculated using USEPA AP-42 emission factor of 0.32 lb/MMBtu.

As noted above, annual emissions of NO<sub>x</sub> from the SCRT need to be limited to 85% of potential to model compliance with the annual NO<sub>2</sub> NAAQS. The calculations below show that an annual fuel oil limit of 13,900,000 gallons will ensure that annual emissions are limited to 85% of the SRCT's potential, regardless of the amount of natural gas combusted in SRCT.

#### Annual heat input capacity

$290 \text{ MMBtu/hr} \times 8760 \text{ hr/yr} = 2,540,400 \text{ MMBtu/yr}$

#### Heat input of 13,900,000 gallons of fuel oil

$13,900,000 \text{ gal/yr} \times 0.14 \text{ MMBtu/gal} = 1,946,000 \text{ MMBtu/yr}$

#### Remaining annual heat input capacity

$2,540,400 \text{ MMBtu/yr} - 1,946,000 \text{ MMBtu/yr} = 594,400 \text{ MMBtu/yr}$

#### NO<sub>x</sub> emissions from fuel oil and natural gas:

Fuel oil:  $(1,946,000 \text{ MMBtu/yr} \times 0.90 \text{ lb/MMBtu}) / 2000 \text{ lb/ton} = 876 \text{ ton NO}_x/\text{yr}$

Natural gas:  $(594,400 \text{ MMBtu/yr} \times 0.32 \text{ lb/MMBtu}) / 2000 \text{ lb/ton} = 95 \text{ ton NO}_x/\text{yr}$

Total:  $876 + 95 = 971 / 1,143 = 85\%$

Existing monitoring, recordkeeping, and reporting permit requirements are sufficient to monitor, document, and report data associated with determining compliance with the new fuel use restriction. No new or modified monitoring, recordkeeping, or reporting requirements are proposed.

#### SCRT Fuel Oil Sulfur Content Limit

The current permit(s) covering the SCRT limit the fuel oil sulfur content of fuel oil (JP-4) fuel oil burned in that device to 0.40% sulfur. This limit is based upon the State fuel oil sulfur limit in Env-A 1604.01(a). As noted above, a more stringent fuel oil sulfur limit of 0.05% was used to model compliance with an SO<sub>2</sub> NAAQS. The temporary permit will establish a modeling-based fuel oil sulfur content limit of 0.05% sulfur for fuel oil burned in the SCRT.

Existing monitoring, recordkeeping, and reporting permit requirements are sufficient to monitor, document, and report data associated with determining compliance with the new fuel sulfur content limit. No new or modified monitoring, recordkeeping, or reporting requirements are proposed.

#### Permit Deviation Requirements

DES has amended Env-A 900 since Schiller Station's last Title V Permit to Operate was issued. While New Hampshire has submitted a request for a SIP-revision to incorporate amended Env-A 900 into New Hampshire's

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SIP-approved rules, USEPA has not finalized review of the SIP revision request. Therefore, in order to incorporate the amended Env-A 900 sections into a facilities Title V Operating Permit, they must first be included in a Temporary Permit for the facility. DES is including the most up-to-date permit deviation requirements of Env-A 900 (in particular, sections Env-A 907 and 911) in this Temporary Permit. The sections of the existing Title V Operating Permit that these new sections supercede are noted in the Temporary Permit.

## PROCESS/DEVICE DESCRIPTION

This application and associated permit apply to emission units SR4 and SR6 (steam boilers SR4 and SR5) and SRCT (combustion turbine SRCT). No modifications were proposed or addressed as part of this application.

## POLLUTION CONTROL EQUIPMENT

No changes to pollution control equipment were proposed or addressed.

## EMISSION CALCULATIONS

No changes to emission calculations were proposed or addressed.

## MODELING

The modeling upon which the emission limits that are the subject of this evaluation was performed during review of applications for previous projects. No modifications were proposed or addressed which required further modeling evaluations. No new modeling was required or performed during review of this application.

## EMISSION TESTING

No new emission testing is required. As noted above, existing monitoring is sufficient to monitor compliance with the new emission limits and fuel restrictions.

## REVIEW OF REGULATIONS

**Env-A 607.01(w) - Applicable:** The sole purpose of this application was to establish permit terms to document previously agreed operating and emission limitations. The limitations are based upon emission rates at which air dispersion modeling did not predict exceedances of any NAAQS. Operating and/or emission limitations established to ensure modeled NAAQS compliance are established pursuant to Env-A 607.01(w).

*Note: The cite was changed from Env-A 607.01(x) in the draft permit to Env-A 607.01(w) in the final permit and application review summary because this section of the rule was renumbered in the amended version effective September 1, 2012. The renumbering did not change the rule requirement and did not effect the analysis or conclusion presented in this application review summary.*

**Env-A 907 & 911 - Applicable:** As noted above, DES is including the most recent version of Env-A 911 permit deviation requirements in this permit.

**Env-A 1604.01(a) - Applicable - Streamlined:** While the State sulfur limit of 0.40% contained in Env-A 1604.01(a) is still applicable for fuel oil burned in SRCT, the permit will be streamlined to include the more stringent modeling-based fuel oil sulfur limit of 0.05%.

No other air regulations were pertinent to review of this limited scope application.